

Problems of Import Substitution: The Chilean Automobile Industry*

Leland L. Johnson

THE ECONOMICS LITERATURE has treated extensively potential problems that less developed countries encounter in promoting new domestic industries to serve as substitutes for traditional imports. Numerous references have been made to the existence of small-scale, inefficiently operated plants able to survive only as a consequence of prohibitive barriers imposed by the government against competing imports. While trade barriers can be well justified in certain cases, observers are keenly aware of the frequency with which protection has led to grossly uneconomic practices.¹

As in the case of so many less developed countries, Chile has emphasized import substitution as a means of conserving foreign exchange. By placing duties on a wide variety of industrial imports to protect domestic

* This research was sponsored by the Agency for International Development under Contract AF 49(638)-1293. The conclusions given in this paper should not be interpreted as representing the official opinion or policy of the Agency for International Development.

¹ See, for example, the concise appraisal of various arguments for protection contained in Gerald Meier, *International Trade and Development* (New York, 1963), pp. 124-41. For an extensive empirical survey see Santiago Macario, "Protectionism and Industrialization in Latin America," *Economic Bulletin for Latin America* (March, 1964), pp. 61-102.

Reprinted from *Economic Development and Cultural Change*, January, 1967, pp. 202-16, by permission of the author and The University of Chicago Press. The author is an economist at the RAND Corporation.

production, the country has achieved a high level of self-sufficiency in the semifabrication and assembly of consumer durables and some capital goods, manufacture of pharmaceuticals, and production of basic metals, textiles, and other items.

The recent experience of Chile in promoting a domestic automobile industry is an interesting case study of (a) the pitfalls that can arise when a country attempts to combine conflicting economic objectives with political ones in designing trade protection programs to favor a particular industry; (b) the role that foreign exchange control can play in maintaining a chronic misallocation of resources in the industry; and (c) the manner in which general price inflation can further contribute to poor industry performance.

The purpose of this paper is to treat the development of the automobile industry in Chile in terms of how it has responded to government development policies, exchange control, inflation, and monetary policy. It will conclude with a brief discussion of the implications of Chile's experience for Peru, which is today in an earlier stage of promoting a domestic automobile industry.

STRUCTURE OF THE INDUSTRY

The Chilean government decided a few years ago to prohibit the continued import of fully assembled automobiles for ordinary domestic use. By forcing firms to import only components and assemble them in Chile, the government anticipated that the domestic value added to production would rise, with a concomitant reduction in foreign exchange cost per completed unit. To increase further domestic value added, the government established a "national integration" program, under which assemblers would be obliged to use in each successive year an increasingly large proportion of Chilean fabricated components as substitutes for imports.

In addition, automobile assemblers were not free to locate their plants wherever they chose. They were induced to build in Arica, situated on the Pacific coast, 1,000 miles north of Santiago and only a few miles south of the Peruvian border. Without special incentives, no assembler would have voluntarily picked Arica but would obviously have picked a spot in or near Santiago—the region constituting both the primary market for automobiles and the primary source of domestically fabricated components. Assembly operations in Arica face the double handicap of requiring that Chilean components be brought up from Santiago and

assembled automobiles sent down again. Furthermore, Arica had little in the way of a skilled labor pool or other industrial infrastructure upon which the industry could draw.

The selection of Arica for the industry was based on a mixture of political and economic considerations. The city and the surrounding region belonged to Peru before the War of the Pacific, involving Chile against Peru and Bolivia. When Chile emerged victorious from the struggle in 1884, both Peru and Bolivia ceded territory to Chile in the Arica-Antofagasta region. But the loyalty, or lack of it, of Arica to Chile has subsequently posed a nagging problem. Inhabitants in the relatively isolated area have frequently charged that their interests and welfare are neglected by the central government, located so far away in Santiago, and they have from time to time threatened to secede and join Peru. The strong Peruvian cultural influence existing to this day in Arica has added credibility to this threat.

Moreover, the area has been a center of extreme left-wing political agitation in Chile. In the 1958 presidential election, the Communist-backed candidate Salvador Allende, one of five contenders to the presidency, captured 50 per cent of the vote in Tarapacá Province (where Arica is the principal city), although he obtained less than 29 per cent of Chile's total vote. In the 1964 presidential race, Allende received 47 per cent of Tarapacá's votes, as compared with 39 per cent he received for Chile as a whole.

The loyalty problem has been all the more urgent as a result of a general economic decline in northern Chile. The region, which contains one of the most barren deserts on earth, was strongly supported in the late 1800s by the booming nitrate mining industry. At that time, Chile was the major world source of nitrogen, essential to plant life and the manufacture of explosives. But the discovery by Germany during World War I of a method of manufacturing synthetic nitrate caused a steady decline in Chile's share of world nitrogen output—from 67 per cent at the beginning of the century to about 2 per cent at present.

In recent decades, Arica's commercial life has revolved around transit trade with Peru and Bolivia, serving as a source of supply to small agricultural valleys and providing the base for a local fishing industry. In the face of continuing migration from the countryside into Arica, these elements were not enough to prevent large-scale unemployment and deplorably low living standards.

Seeking to stimulate Arica's development during the mid-1950s, the government decided to make the city a "free port." In contrast to the high duties levied on many imports at other Chilean ports of entry, a list of privileged goods was to be permitted free entry into Arica. As

an export center for the rest of Chile, the city would have a substantial commercial advantage.

Arica did enjoy a measure of prosperity during its early years as a duty-free port. However, there were so many abuses of free import privileges that the list of commodities eligible for special entry treatment has been progressively shortened: by this time, Arica's freeport status has nearly vanished.

Facing difficulties with the free-port mechanism, the government attempted to promote light manufacturing, including automobile assembly. By granting special tax benefits and permitting the duty-free import of plant equipment and automobile components for companies willing to locate in Arica, the government expected substantial economic

Table 1—Automobile Assembly Plants in Arica

Name of company	Make	Number of units produced	
		1963	1964
Citroën Chilena S.A.	Citroën	1,937	1,533
Fiat Automóviles Arica S.A.	Fiat	1,538	600
Equipos Mecánicos Salta-Siam S.A.	Chevrolet	84	168
	Austin	267	332
	Morris	—	36
Sociedad Industrial Constructor Automóviles Ltda.	Peugeot	156	288
	Land Rover	144	78
	General Motors	—	96
Importadora Fisk S.A.C.			
Importadora Wal S.A.I.C.	Chevrolet	412	412
A. Avayu & Cia. S.A.I.C.	Opel	400	384
Nissan Motor (Chile) Ltda.	Datsun	—	577
Sociedad Importadora Willys Ltda.	Willys	24	6
Javier Echeverría A.	Triumph	23	—
	Standard	—	72
	Chevrolet	144	140
Industria Anglo Americanas Ltda.			
Socovem Ltda.	Simca 1300	263	229
H. Frederic Y. Cia. Ltda.	NSU	338	387
Industria Studebaker Bolocco S.A.	Studebaker	432	48
	Hillman	—	204
	International	316	216
Industria Vehículos Tecna Ltda.	Chevrolet (Acadian)	200	—
	Vauxhall	172	216
Importacion y Comercio S.A.	Skoda	24	60
Nun & German S.A.C.	Simca 100	744	940
S.A. Importsur (one plant)	Volvo	288	288
Sociedad Automotrices Unidas Ltda.	Renault	—	200
	Rambler	—	48
Ford Motor Company	Ford (pick-up trucks)	274	—
Total		8,180	7,558

Source: American Embassy, Santiago, Chile.

benefits to accrue to the area.² About twenty automobile firms have been attracted to the city; as shown in Table 1, each produced a handful of cars in 1963 and 1964.

These firms import fully knocked down body parts and assembled engines and drive-train components. Chilean components, most of which are fabricated in Santiago, typically consist of glass, tires, batteries, bumpers, upholstery, seats, hubcaps, and simple sheet metal items. Assembly operations include welding the basic body parts together, installing the other parts along an assembly line, and running the cars through a paint shop and inspection. After sitting in the yard for a number of weeks or months, the completed cars are sent by truck or, in some cases, by cargo plane to Santiago.³

THE SEASONALITY OF PRODUCTION

A number of curious phenomena surround the industry. For one thing, assembling cars in Chile—like growing carrots—is a seasonal business. Many of the firms produce no cars in the first four or five months of the calendar year. Production accelerates during the second half of the year, reaching its peak in December. Four of the eight firms I visited in early June 1965 were just getting ready to produce for the 1965 model year. Others were assembling only a small fraction of the total they hoped to produce by the end of the year. One plant was running at four or five units a day, but the plant manager, with obvious pride, told me that in December 1964 the plant reached a peak of eighteen in a single day. Another, not producing anything in early June 1965, hoped to assemble 800 units before the end of the year.

In view of Arica's unstable political environment (which provided

² The finished automobiles are, however, subject to a duty (in excess of 100 per cent of the value of imported parts) when they leave Arica for the rest of the country. Arica remains, in a sense, one big customs house for certain privileged imports—reminiscent of its earlier days as a free port.

³ At first glance, it is surprising that air cargo is employed at all, given the generally fair-to-good ground transportation facilities between Santiago and Arica. However, the assembly plants in this case incur little difference in cost between truck and airplane transportation. This situation raises the nagging economic problem of discrepancies between private and social cost. Aircraft and their associated repair and support equipment enter Chile under a special arrangement whereby they pay little duty. The rationale for this treatment stems from Chile's desire to stimulate the growth of domestic aviation. This includes private flying, too, with the consequence that the sport is no more expensive, even with its high foreign exchange cost than in the United States.

a good share of the rationale for locating the automobile industry there in the first place), it would seem the height of folly to establish an industry that hires and fires labor on a seasonal basis. Yet this is what happens. One firm employs about 200 workers during the peak in December and tries to retain about 30 per cent of the force during the slack season. Another plant had twenty workers in early June 1965 and planned to have eighty when production got well underway later in the year. A third was maintaining a skeleton force for all sorts of things—rearranging the plant, painting, maintenance, landscape gardening—until production started. Of the two firms I contacted having the least severe seasonal problem, one employs on the average about 150 workers and tries to keep the level within plus or minus 30; the other employs about 200, plus or minus 50.

Plant representatives I interviewed seemed aware of the severe social and political problems in Arica, but their response was frequently, "After all, what can I do?" Some workers they dismiss leave the area and are not seen again; others return to the plant during the expansion period. A few managers complained that some of the better workers, trained at company expense, eventually are lost to the superior attractions of other industries in Santiago. In general, the managers have no idea of what happens to the workers after they are dismissed. No mention was made of any special unemployment benefits or work relief programs to tide the workers over the slack season.

Aside from employment problems, the seasonal nature of the business contributes to large inventories of both completed cars and imported components. Since so many cars are produced late in the calendar year, and since consumer demand is *not* seasonal, these firms typically are left with huge inventories (relative to the level of annual production) on January 1. The inventories are gradually worked down during the slack season the following year, to maintain a more or less constant level of monthly sales in Santiago. These inventories are held in Arica, with a few units released each day for Santiago, in order to postpone as long as possible payment of customs duties on the imported parts.⁴

Not only do the cars frequently suffer deterioration during lengthy storage,⁵ but this inventory pattern ties up a substantial amount of foreign exchange and domestic value added. In June 1965, one plant still had about

⁴ See note 2.

⁵ Many completed automobiles sit in the open for weeks or months, with paint deteriorating in Arica's harsh sunny and windy climate. At least one plant uses tarpaulins to protect its cars, but violent summer windstorms whip the tarps about, causing abrasive damage. Some of the cars have to be repolished or repainted

500 completed automobiles carried over from the 1964 production run of about 1,000 units. (Each of these cars retails for about \$6,000 in Santiago.) A second plant had about a hundred completed cars from the 1964 run—roughly 30 per cent of the total produced. Moreover, crates in the yard contained the imported parts for 220 of the 400 or so units the plant is scheduled to complete in 1965. A third plant was carrying an inventory of roughly 200 completed units, or about 15 per cent of 1964 production. One plant had completely exhausted its inventory of finished cars, but already had on hand by June 1965 enough imported components to produce about 500 during the second half of 1965 (as compared with a production run of about 300 units during 1964).

CHILE'S PROGRAM OF NATIONAL INTEGRATION

The basic cause underlying this seasonal pattern of production is the enormous difficulty of obtaining enough domestically produced components to comply with the "national integration" requirements. As mentioned previously, each assembly plant is permitted to remain in business only if it uses an increasingly large proportion of domestically fabricated parts each year. In 1964, a minimum of about 27 per cent of the value of the vehicle had to be represented by components fabricated in Chile; in 1965 the minimum percentage rose to about 32 per cent, and in 1966 to about 45 per cent. For the plants to go from 27 per cent to 32 per cent and then 45 per cent generates no end of problems, because the plants have to procure from Chilean sources progressively more kinds of items that are difficult to fabricate.⁶ It is easy enough to start out with tires and batteries, because these are fairly simple in technology and lend themselves to reasonably small-scale production; but to go on to glass and small fittings is more troublesome, and to proceed to sheet metal work strains even more the capabilities of Chilean industry.

While visiting these plants in mid-1965, I found many striking examples of this problem. One plant manager obtains the front doors

⁶ The values on which the percentage is based are the relative prices of the components in the country of primary manufacture. That is, if the radiator of a Chevy II represents 1 per cent of the value of the car in the United States, the Chilean assembler of Chevy II's would obtain a 1 per cent credit against his minimum integration requirement if he purchases locally fabricated radiators. He would not receive additional credit on the strength of the fact that locally produced radiators, costing perhaps four or five times as much as those in the United States, would constitute more than a per cent of the value of the car in Chile.

for his automobile from Santiago, but imports the back doors from Europe (he is expecting to add the back doors to local procurement in 1966, in order to meet the higher integration requirements). He complained that his plant has had to rework every single door that has been delivered from Santiago. And, sure enough, as he was taking me through the plant, he pointed out a laborer with a cutting torch in hand working over a pile of doors in one corner of the shop. He also stated that he used to purchase the front seat frames, consisting of bent-steel tubing, from Santiago, but has simply given up because "no two came out the same." So now he is fabricating the frame directly in the plant. He called my attention to another laborer who, with a simple bending jig and series of levers, was forming the tubing into shape.

A second plant manager noted similar examples. He showed me a quality control test report on a batch of Chilean fabricated coil springs. The report disclosed that when the springs were fresh, most of them were within tolerance levels for overall height. But after they had been sprung up and down a specified number of times under a given weight, their heights varied over an intolerably wide range. The manager concluded from the report that he would not be able to accept more than 20 to 30 per cent of the springs being delivered.

Another official went into some detail about the high costs of the Chilean fabricated components relative to the costs of the same imported item. It was not unusual to get local cost quotations of four, eight, or even ten times the cost of the imported item. In the case of curved glass windshields for his make of automobile, the differential cost factor was fourteen. (Faced with the difference, he is continuing, at least for the time, to import windshields.)⁷

There was abundant evidence of the delays resulting from the lack of parts ordered from Chilean sources. In one plant about twenty bodies were hung up because they lacked Chilean produced fenders. The same plant was unable to start work on the 100 units of another automobile it hoped to assemble in 1965 because it hadn't been able to get enough components of acceptable quality to meet national integration requirements. In another plant, a number of completed units had front ends drooping because they lacked front suspension parts that were supposed to have been delivered long ago. In other cases, completed cars were sitting out in the open, with a few minor parts missing here and there.

Problems with domestically fabricated components are largely

⁷ Fabrication of automobile components in Chile is performed by a wide variety of machine shops, textile mills, plastics fabricators, and so on, most of which are located in the Santiago area.

responsible for the seasonality of production. According to Chilean law, an automobile is judged to meet the integration requirement of a given year only if it is completed before the end of that year. For example, the integration requirement for 1965 was about 32 per cent, and all cars delivered by the plants with 32 per cent local parts had to be completed by December 31, 1965. Any cars left over must then bear the higher 45 per cent requirement for 1966. And to enforce this law, government inspectors visit each plant at the end of the year to certify which cars have and which have not been assembled.

It is in the interest of each firm to finish as many cars as possible before the end of the year, since the larger integration percentage requirement of the following year imposes a very high additional cost, in terms of both money and time, on delayed assembly. After the end of the year, the plants simply do not have the additional *kinds* of components necessary to meet the new integration requirements. It takes months to build up a supply of these components before full-scale assembly can get underway. So it is not until June or July that the assemblers are producing again at anything like normal levels. Subsequently, they accelerate production and have another splurge the following December.

Questions immediately arise as to why Chile should have such difficulty in domestic fabrication of components. One obvious factor is that Chile, as we might expect of a country seeking to rapidly industrialize, does not have adequate managerial talent, skilled labor, organization, and capital to comply immediately with the national integration regulations. But there are other more specific elements as well. First, components are ordered in such small quantities that Santiago suppliers have no driving interest in building up a dependable capability that would involve importing new machinery and training workers for miniscule production runs. The problem is complicated by the fact that assemblers are unable to predict their components requirements early in the year, because they do not know how much foreign exchange for imports will be provided to them by the Central Bank—a point discussed later in more detail. Second, difficulties of communication over the long distance between Arica and Santiago (connected by radio-telephone) accentuate the problems of making suppliers in Santiago understand precisely what is needed and when and getting them to comply.

Finally, suppliers are reluctant to take seriously any orders from automobile plants because the whole future of Arica is uncertain. The strong possibility exists that the policy of the Chilean government towards the industry is going to change radically. In mid-1965, the government was negotiating with Kaiser Industries to set up a plant in Los Andes, a city about fifty miles north of Santiago. Negotiations were

also underway at the same time with Volkswagen to establish a plant in the Santiago area. This sort of thing terrifies the people in Arica, for they realize that they would be at a severe competitive disadvantage being located so far from Santiago. Furthermore, there are already too many automobile firms in Chile, operating at high-cost, low levels of production. To add more firms would make life that much more difficult. Therefore, the companies cannot commit themselves very far ahead of time in orders to Santiago suppliers; rather, they operate more or less from month to month. And the suppliers, too, are reluctant to invest in specialized equipment and labor force to fill orders of an industry with such a dubious future.⁸

Against all this, we should note one factor that may in the future mitigate problems of national integration in the industry: the evolution of the Latin American Free Trade Association. Under present government regulations, the plants in Arica may import components from Argentina and Brazil, and these will count as national parts in fulfilling the integration requirements. A major stumbling block, however, is that these plants must export an *equivalent value* of other automotive components to their partners in other Latin American countries as a straight barter deal. And Chilean plants now have a comparative advantage in exporting only a few automotive components under such an arrangement. One firm is experimenting with the fabrication of hubcaps in Arica, hoping that they will be of sufficiently high quality to provide additional exports, so that more Argentine components can be procured.

One of the eight plants I visited seems to have progressed quite far in this direction. In early June it was just getting ready for assembly operations, after having produced only a few dozen automobiles in the preceding twelve months. But the plant has arranged barter deals with other Latin American plants producing the same automobile; the manager is confident that he will be able to produce 1,000 units by the end of 1965 and maintain production in the early part of 1966 by the ability to comply immediately with the higher integration requirements. The attitudes of the other managers ranged from guardedly optimistic to pessimistic about the future of such arrangements. Some hope to import a few parts from Argentina and Brazil, but are hard-pressed to figure out what to send back in return. Managers of the few plants that do not have strong potential trading partners in the other countries expressed little hope.

⁸ Even with the uncertain future, however, the Ford Motor Company has recently joined with Bolocco and Company, one of the firms listed in Table 1, to assemble F-100 pick-up trucks and Ford Falcons. According to public announcement, the new enterprise expected to produce about 400 trucks in 1965 and 1,800 to 2,000 trucks and Falcons in 1966—a large volume relative to Arica's market.

COSTS OF IMPORT SUBSTITUTION

Serious question arises about the costs to Chile of pursuing its program of import substitution in the automobile industry. It is impossible to treat this question definitively, because a detailed local cost breakdown is not available, and methodological problems arise in converting from local costs to foreign exchange costs, given Chile's controlled multiple exchange rate system. However, a range of possibilities can be derived from the analysis in Table 2 for a compact-size, economy-line automobile (such as a Rambler or Chevy II).

Table 2—Estimated Cost Breakdown for a Compact-size Automobile of the Rambler-Chevy II Class, Early 1965

	Escudos	Exchange rate	Dollars
Imported components ^a	3,600	3 to 1	1,200
Customs duties and taxes ^b	5,400	3 to 1	1,800
Domestically fabricated components and assembly costs ^c	12,000	(residual dollar figure)	5,200
Retail markup	7,000		
Retail price ^d	28,000	3.4 to 1	8,200

^a Based on personal interviews, the dollar cost of imported parts including transportation is estimated at \$1,200 and is converted to escudos at 3 : 1—the "futures" exchange rate that covers most imports approved by Chile's Central Bank.

^b Customs duties and taxes are estimated at 150 per cent of the value of imported parts and are converted at the 3 : 1 futures exchange rate.

^c The escudo retail markup is estimated at 25 per cent of the retail price, leaving 12,000 escudos as a residual to cover domestic components and assembly costs.

^d The observed retail price of 28,000 escudos is converted to \$8,200, at the 3.4 : 1 "brokers" exchange rate, that is, the rate at which one would legally convert dollars to escudos in making the retail purchase.

Since the wholesale price of a *fully* assembled compact imported into Chile would run to about \$2,200, compared to the \$1,200 cost of imported components in Table 2, about \$1,000 of foreign exchange is directly saved by substituting domestic assembly and locally fabricated components. We might consider that the cost to Chile in making this substitution is the 12,000 escudo residual figure shown in Table 2. Unfortunately, the relevant trade-off between escudo and dollar costs is not clear, because there exists no unique exchange rate that reflects accurately the relative costs of foreign and domestic resources. If we use the government controlled futures rate of 3 escudos per dollar, the trade-off would be 4 to 1; that is, Chile would be using the equivalent of \$4,000 in local resources to save \$1,000 worth of foreign resources. If we take the black market rate of (roughly) 6 escudos per dollar, the trade-off

would drop to 2.4 dollars of local resources per dollar saved of foreign exchange.⁹

Now one might object that the 12,000 escudo figure also includes some economic rent (arising from extraordinary profits of assemblers, fabricators, and retailers), so that real resource cost falls to something below 12,000 escudos. In this case, the trade-offs would fall and would appear less unfavorable for Chile's program.

On the other hand, the \$1,200 cost of imports in Table 2 includes only finished or semi-finished parts identifiable as imported automobile components. The domestically fabricated components included in the 12,000 escudo estimate also have an import content consisting of such things as imported chemical ingredients used for domestic manufacture of plastics, metals not produced domestically that eventually end up in automobile uses, and imported tools and machinery employed by the domestic fabricators of automobile parts. To the extent that domestic components have a foreign exchange content, Chile saves less than the \$1,000 of foreign exchange estimated above, and the trade-offs on this count would move in the other direction.¹⁰

On balance, it would appear that within a wide range of assumptions about exchange rates, economic rents, and import content of domestic production, Chile's program of import substitution in the automobile industry is expensive. It seems possible that two, three, or even four dollars of local resources are being consumed for each dollar of foreign exchange being saved through the program. If so, Chile would be far better off importing fully assembled automobiles, and perhaps levying a heavy import tax to maintain the retail price at present levels. While foreign exchange costs would rise, the value in alternative uses of domestic resources otherwise tied up in the automobile industry would more than compensate.

⁹ The exchange rates mentioned here are those existing in early 1965. The escudo has experienced fairly continuous devaluation since that time.

¹⁰ For example, suppose domestically fabricated parts have a 20 per cent import content, based on the \$1,000 foreign exchange value estimated above of parts produced locally as a substitute for imports. The actual foreign exchange saved would drop from \$1,000 to \$800. If the extra imports of \$200 are financed at the 3 : 1 futures rate (which would ordinarily be the case), the local resource costs would fall from 12,000 to 11,400 escudos. Given a black market rate of 5 : 1, the 2.4 : 1 figure estimated above would rise to 2.85. However, these extra imports would probably be subject to import duties and taxes that are domestic transfer payments rather than costs. If we use the same 150 per cent *ad valorem* factor shown in Table 2, the escudo value of \$200 imports would be 1,500 (or 200×2.5 converted at the 3.0 futures rate), the domestic cost would fall from 12,000 to 10,500 escudos, and the trade-off at the black market rate would run to 2.62 rather than 2.85.

In defense of Chile's program of import substitution, one might raise two familiar arguments. First, the value of the automobile industry to Chile is greater than implied above: these cost figures take into account neither favorable externalities to the rest of the economy, nor the difference between social and private labor cost. Among other things, the industry is able to capture for itself only a portion of the benefits that accrue from its role in training a labor force, identifying and providing experience for industrial managers, and coping with problems the solutions of which have application elsewhere. Second, in a learning process extending through time, Chile will be progressively better able to undertake fabrication and assembly operations discussed above. What may be a comparative disadvantage in the short run may not be so in the longer run.

Against these arguments we might note in turn three points:

1. The external benefits argument can be applied to all manner of alternative activities: it is not obvious that resources devoted to other uses would generate lesser external benefits than those arising out of a domestic automobile industry.
2. While some disparity exists between social and private labor cost, we must be careful not to overestimate it. Some of the labor employed in Arica would likely be unemployed in the absence of the industry, so in this case the social cost of labor is close to zero: however, the seasonal employment pattern tends to mitigate this favorable effect. Moreover, labor costs in the Santiago area, where components are fabricated, cannot be considered near zero, because Santiago does not suffer from a serious unemployment problem. And we should also note that industry does require large skilled labor inputs (as in metal-working, welding, and drafting) and managerial resources whose social costs are relatively high.
3. With respect to the continued manufacture of components already being produced in Chile, the learning effects will probably reduce Chile's comparative disadvantage in the long run (though continued technological advance in the manufacture of these components in the exporting countries will, by itself, work in the opposite direction). However, if Chile continues to impose requirements for an increasingly large percentage of local components, fabricators will face new difficulties working with the more advanced production techniques. Today Chilean fabricators cannot handle machined engine and drive-train parts and large forgings and castings. It is difficult enough to fabricate fenders, glass, radiators, and so forth, but to proceed to components requiring high levels of precision is quite beyond Chile's

present-day capabilities. However, fabricators will be forced into these more difficult areas if Chile continues to insist on a progressively higher percentage of locally produced components. The resulting cost differentiation between domestic and foreign production could become even greater than those noted above. The issue is not whether promotion of domestic assembly and domestic fabrication per se is a wise policy, but rather *how fast* the government should push the industry toward progressively higher levels of import substitution. The optimum time path depends, of course, on a careful weighing of short-term and long-term costs and benefits, taking into account the speed and magnitude of learning effects and externalities.

FOREIGN EXCHANGE PROBLEMS

One factor that contributes to seasonality of production, as well as to the proliferation of small-scale plants, is the difficulty of obtaining foreign exchange for imports of components. Foreign exchange is provided by the Central Bank only for imports it approves. The exchange rate is not allowed to fluctuate to reflect conditions of supply and demand. Rather, by rationing foreign exchange, the Bank is able to maintain an overvalued exchange rate for the Chilean escudo, judged in terms of free market forces. Consequently, the demand for foreign exchange far exceeds the supply at the overvalued rate. The plant managers I have contacted complained that they never know more than a few months ahead of time how many dollars they will have. They cannot plan carefully for one year's production, let alone the following year's, since their total output is subject to great uncertainty. One manager stated that he had "authorization" for 460 vehicles in 1965, but he hoped to get an increase to 800 before the year was out. Another said he had "put in" for 400, but thought it likely that he would get authorization for no more than 200. ("You always put in for more than you think you will get," he said.) Another said he "hoped" for 400, but was not sure. By June 1965 not a single manager was able to provide a firm estimate of total production for 1965. Most said that they could easily increase sales if only they could get more foreign exchange.

This situation is disturbing. The Bank apparently dribbles out a little foreign exchange to any producer able to meet the national integration requirements. Relatively efficient producers are not able to drive the less efficient out of the market, as an aspect of normal competitive behavior, because the level of each producer's sales is ultimately determined by the foreign exchange provided by the Bank, not by any market test. The total amount of foreign exchange allocated to the industry is low (relative

to the demand for new automobiles), but since it is provided at a favorable rate of exchange, a company can remain in business with a good profit even if it is notoriously mismanaged and inefficient. The demand for new cars pushes retail prices up, the overvalued exchange rate keeps import costs down, and a comfortable margin remains to be divided among the assembler, parts suppliers, and retail dealer. Small wonder, then, that each assembler would like more dollars than he is getting! The upshot is that the industry has all the disadvantages of competition, without any of the advantages, and with the high cost borne by the consumer.

I have been told that when the assembly industry was first started in the early 1960s, the government considered restricting entry to only a few firms, so that each could operate at higher, more economic levels of output. But the government was not able to formulate acceptable criteria by which companies could initially be selected. The decision was therefore made to let any firm enter, so long as it was willing and able to meet the general conditions of operation imposed by the government. Since these conditions were made progressively more stringent through time, some observers hoped that in the struggle of survival many firms would eventually be forced to close, leaving the field to a few of the strongest. However, given the circumstances noted above, this weeding-out process has so far not taken place.¹¹

Partially as a consequence of the lack of a weeding-out process, the industry suffers an enormous amount of overcapacity in plant. Of course, "capacity" is an imprecise concept, for there is generally no uniquely defined point at which a plant is operating at capacity. Nevertheless, the apparent low utilization rates of plant in Arica is striking. Aside from the seasonality problem, each firm I visited could easily produce many more vehicles than it does. Even in the December peak season, most firms are able to take care of production on the basis of one shift plus some overtime. One manager hoping to produce 400 vehicles in 1965 told me he could easily produce 1,000. Another, hoping for 810, said he could assemble 3,000. I estimate that three or four of the largest plants in Arica could take care of the total output of the twenty or so existing plants, and even that on more or less a oneshift basis.¹²

At this point, the crucial question is how the Bank does in fact go

¹¹ An interesting discussion of the economic effects of exchange control is presented by Jorge Marshall, "Exchange Controls and Economic Development," in H. S. Ellis, ed., *Economic Development for Latin America* (New York, 1961), pp. 430-69.

¹² A brief, perceptive treatment of the importance of resource misallocation in underdeveloped countries is provided by Hla Myint, "Economic Theory and the Underdeveloped Countries," *Journal of Political Economy* (October, 1965), pp. 485-86.

about allocating dollars to the industry and to individual firms. A committee of Bank members meets periodically to consider applications for foreign exchange. The process by which the committee decides how many dollars the automobile industry, or any other industry, ought to receive is guided by a law passed early in 1965. It specifies that if the total value of foreign exchange requests in a given industry (or, more precisely, in a given import "category") in a given month does *not* exceed by more than 5 per cent the average monthly value of the foreign exchange actually granted to that industry during the preceding twelve months, then the Bank *must* approve *all* of the requests of the individual firms in that industry. On the other hand, if the total value requested exceeds by more than 5 per cent the preceding twelve-month average of approved requests, the Bank *may* either reject or approve all the requests of that category. In any event, the Bank must either accept or reject all requests in the given category. It cannot accept those of some firms and reject those of others.

Now this is a very peculiar law, for it means that if a firm submits an unreasonably high request for dollars and happens to hit the right month, the request must be approved. If it hits the wrong month, the request may be rejected, however meritorious it may be. We would expect that some firms would therefore have access to large sums of dollars, while others would suffer serious shortages. This may be the reason for the large inventories of imported components in Arica—these firms were simply lucky in filing their requests at the right time.

I have been told that this law is not popular in the Central Bank, and attempts are being made to change it. The only rationale for the law in the first place appears to be the Bank's reluctance to accept the requests of some firms and simultaneously reject the applications of competitive firms, thereby possibly exposing itself to accusations of favoritism.

However, it would seem that in seeking to avoid favoritism, the Bank appears essentially to be giving up public control of the allocation of dollars within any given industry. If the law is to work at all, many firms almost certainly must get together and agree among themselves to submit a total request within the 5 per cent limit and to decide among themselves how much each will receive. Otherwise, all firms would have an incentive to submit inflated requests, and the total value of all requests would be likely to exceed the 5 per cent limit *every* month.¹³ But to

¹³ How the Bank arrived at the 5 per cent figure is also unclear. There is little economic justification in a procedure that in effect "guarantees" that monthly imports in any given category will rise by 5 per cent over the preceding twelve-month average, so long as the total requests in that category do not exceed the 5 per cent figure. Such a procedure penalizes rapidly growing industries and serves to protect existing inefficiency operating firms.

encourage the firms to get together to make these kinds of decisions would be to encourage them also to agree about prices, outputs, and other things that in the United States would be considered gross violations of the antitrust laws.

Apart from this particular law, the allocation of foreign exchange by committee has other undesirable features. One would imagine that the committee is subjected to enormous pressures to reject or accept certain categories of requests. Moreover, the uncertainty that each firm has with respect to its future foreign exchange supply, combined with its artificially low price (with the overvalued escudo exchange rate), gives these firms the incentive to keep larger inventories of imported items than would otherwise be the case. In firms I have visited in Santiago, several managers admitted that they try to keep large inventories of imported items, because "we never know when we will get more dollars." They do this by submitting inflated requests repeatedly; some, of course, are rejected, but over the long pull they have been able to get enough requests accepted by the Bank to enable them to build up large inventories.

Finally, the question arises as to why the Bank did not let the automobile companies, as well as other industries, bid for the available foreign exchange; in other words, why not provide a freely fluctuating exchange rate for some or all categories? The answer rests in the fear that if firms were to bid for foreign exchange, the escudo costs of imported goods would rise, prices would rise, and this would defeat the attempt of the government to fight inflation. The rationale of maintaining a controlled, overvalued rate is to keep the price of imported goods relatively low. This is one of the basic means of reducing inflation below the 25 to 50 per cent annual rates that Chile has experienced in recent years. The trouble with this approach, however, is that it views inflation as entirely a cost-push, rather than a demand-pull phenomenon. To the extent that demand pressure causes prices to rise, the result of this exchange rate policy may primarily be to provide relatively large profits to a favored few, along the lines described earlier.

PROBLEMS OF INFLATION AND MONETARY POLICY

In Chile, the real rate of interest is *negative* for those firms having access to bank credit, for the legal maximum of the nominal rate of interest is about 18 per cent. Since the cost of living index and the wholesale price index rose by about 25 per cent and 40 per cent, respectively, during 1965 (as part of Chile's chronic inflation), the real rate of interest is below

zero.¹⁴ To the extent that these firms obtain bank credit to finance their inventories, they have little incentive to keep inventories low. Because the price of cars moves roughly in accordance with overall prices, investing in these inventories is probably as good a hedge against inflation as anything. And given the negative interest rates, the firms can make a little extra as well. In this manner, general price inflation is another factor contributing to seasonal production, insofar as it reduces the (private) cost of accumulating large inventories at the end of each year.

Of course, the demand for credit, given negative interest rates, far exceeds the supply. All the industrialists I have contacted in Chile, both in the automobile industry and elsewhere, complained that they are short of working capital, since they are not able to borrow as much from the commercial banks as they would like.

So long as the banks meet the fractional reserve requirements of Chilean banking law, they have an incentive to lend against demand deposits at any positive nominal rate. Since the interest rate is not an effective rationing device, the banks are forced to allocate credit on a more personal basis, by giving preference to their "good" customers. For example, if the client channels his foreign exchange business through his bank (a lucrative source of bank fees), the bank would view more favorably his request for credit than would otherwise be the case.

Despite all the talk in Chile about the evils of continuous rises in prices and the necessity to "wage war" on inflation, Chilean monetary policy continued to be expansionary, at least through 1965. The ceiling on credit imposed by legal reserve requirements has not been especially effective in restricting credit to reduce inflationary demand pressures in the economy.¹⁵ Bank reserves have tended to rise rapidly through time, as a consequence of deficits in the government budget financed by loans from the Central Bank, thereby permitting a multiple expansion in additional credit. The Central Bank has compounded the problem by standing ready to rediscount paper of the commercial banks, when they are caught short of reserves, up to a "quota" fixed each month by the Central Bank. Moreover, the commercial banks have been able to borrow directly from the Central Bank (at a nominal interest rate below the

¹⁴ With respect to Chile's chronic inflation, Joseph Grunwald observes: "A cost of living index, first computed in 1928 and used until the end of 1957, showed annual increases averaging about 6 per cent in 1931-35; 20 per cent in 1946-50; and 22 per cent in 1951-52, the last years of 'normal' inflation. In 1953, the pace of inflation suddenly quickened. In that year the cost of living rose by 56 per cent; in 1954 it climbed by 71 per cent; and in 1955 it almost doubled in a single year, rising by 85 per cent." G. M. Meier, *Leading Issues in Development Economics* (New York, 1964), p. 220.

¹⁵ During the first ten months of 1965, the money supply in Chile rose by 45 per cent.

legal maximum) as another way to make up for deficiencies in reserves. During the first part of 1965, the Central Bank followed the practice of extending credit to any bank suffering a deficiency of reserves, so long as that bank had not increased its own loans to the public by more than 2 per cent in excess of its loans for the preceding month. Since those banks enjoying excess reserves could continue to lend up to whatever maximum was permitted by their reserve position, this policy in effect put a 2 per cent per month floor on the expansion of commercial bank credit.

After June 1, 1965, the Central Bank attempted to tighten up, but only by modest proportions. It continued to extend credit to those banks suffering deficiencies in reserves in cases where the banks had not extended credit above their ceilings of May 1965. Those banks gaining reserves were able to continue to expand credit as before. Moreover, the Central Bank continued to stand ready to rediscount paper of the commercial banks on the basis of monthly quotas.

Questions immediately arise as to why the Bank has not tightened up more rapidly, given all the protestations in Chile about the evils of inflation. Part of the explanation is that the Central Bank is under strong pressure from business interests to continue an expansionary policy; the economy is geared to inflation, and a readjustment at this point would be terribly painful. Consumers would suddenly find themselves unable to pay off old installment credit contracts without the large annual increases in their money wages and salaries that they are accustomed to. Business would suddenly find the real interest rate less negative, or even positive. It may be true that some firms literally could not survive without negative interest rates.

Moreover, the business community can effectively exert pressure upon the Central Bank because it is heavily represented on the Bank's Board of Directors (of the eleven members, seven are from the private sector). As part of its "Banking Reform" program, the Frei government is attempting to place control of Central Bank policies in the hands of a small "junta" composed only of government officials. Representatives of the business community would be relegated to a "committee" serving only in a consultative role. As of December 1965, the necessary legislation had yet to be passed by the Chilean Congress.

IMPLICATIONS OF THE CHILEAN EXPERIENCE

Chile is only one of a long line of countries that have promoted domestic automobile industries through the use of trade barriers. Other countries are in earlier stages of developing a domestic industry. It may

perhaps be useful to discuss briefly the situation of one of these newcomers—Peru—in terms of Chile's experience.

The government of Peru is attempting to stimulate a domestic industry by lowering customs duties on imports of automobile components, while continuing a high tariff (running from 30 per cent to 100 per cent *ad valorem*) on assembled automobiles. Responding to the bait, six manufacturers, five of them based in the U.S., had plans to open plants in 1965, representing a total investment of about \$22 million. The first, owned by General Motors, began operation in mid-1965.

For three reasons, Peru may have a somewhat easier time than Chile. In the first place, the industry in Peru is not being used as a tool for regional development. Part of Chile's troubles stemmed from forcing the industry into Arica, for the industry was thereby immediately saddled with the high costs of transporting finished automobiles to Santiago and the added communications problems of dealing with Santiago components suppliers. Having once established the industry in Arica, the government of Chile now faces serious problems of how to live with or modify that decision. While not all of the problems of the industry stem from its location, plans are now under foot, as mentioned earlier, to set up operations in the more economically attractive Santiago area, thereby threatening to erode whatever political gains may have been achieved by trying to operate in Arica. In contrast, in Peru the industry is being established in Lima, in the midst of the central market for both inputs and outputs.

Secondly, Peru has a free foreign exchange market, as opposed to Chile's system of foreign exchange rationing through the Central Bank. Since plants will be able to import freely, at the going exchange rate, they should be able to compete much more effectively than is the case in Chile. Hopefully, fewer plants will emerge, with each producing at a larger, more economic level of output.

Third, the problem of inflation historically has been less serious in Peru than in Chile. Given a continuing positive real interest rate, the distortions in inventory holding noted earlier are less likely to appear. Perhaps even more important, in the absence of strong inflationary pressures, Peru's balance of payments is less likely to be threatened in a manner that would call forth exchange controls. We should note, however, that the cost of living jumped by about 20 per cent in Peru during 1965. Peru's legal maximum nominal rate of interest of 13 per cent, combined with continued rapid price rises, could cause trouble along the lines discussed above. At the same time, the Central Bank of Peru is taking what appears to be strong action. In mid-1965 it raised minimum commercial bank reserves from 29 to 30 per cent and established an *additional*

40 per cent reserve requirement against increases in deposits above the level existing at the end of May, 1965.

Against all of this, Peru is planning to impose requirements for domestic fabrication of components analogous to the case of Chile. During the first year, the figure is 10 per cent of the value of the vehicle, rising to 30 per cent at the end of five years. Depending on how the detailed regulations are written and enforced, the system could generate undesirable seasonal pressures. A basis lesson from the Chilean experience is that success, or defeat, depends on how fast import substitution is pushed. In the case of Peru, a 30 per cent national integration at the end of five years is less rapid than the pace being attempted in Chile. Of course, for a given level of integration, Peru could experience more, or less, difficulty in local manufacture. Again, the key problem is to tailor wisely the program to the peculiarities of the local environment. In this, too, Peru has an advantage over Chile, in that the strength of her balance of payments makes the whole process of import substitution less urgent. Enjoying a well diversified export base and relatively high current export prices, Peru's foreign exchange reserves have shown impressive increases over recent years.¹⁶ If this situation persists, Peru will be under less pressure to jump headlong into an ill-advised accelerated program of import substitution.

¹⁶ Good compilations of current economic data for Peru and Chile are contained in respectively, the monthly "Economic and Financial Review" published by the Central Bank of Peru, and the *Boletín Mensual* of the Central Bank of Chile.